

REMARKS

Support for the amendment to claim 1 is found, for example, at page 1, lines 3-7 of the specification.

Entry of the amendment is respectfully requested as placing this case in condition for allowance.

Review and reconsideration on the merits are requested.

Claims 1 and 3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bresson (U.S. Patent No. 5,205,213) in view of van der Velden (U.S. Patent No. 4,553,040) and Songer (U.S. Patent No. 5,577,443).

Bresson was cited as disclosing a core roller (1) having an unshrinkable sleeve of an elastomeric material (2) disposed thereon at a thickness of 30-200 μm . The Examiner relied on Van de Velden as teaching a sleeve (3) heat welded onto a core (1). Further, Songer was cited as teaching an elastomeric material having a Young's modulus of 120-200 MPa. The reason for rejection was that it would have been obvious to modify Bresson to provide a metallic core and a sleeve welded thereon to securely fasten the sleeve, and to further provide an elastomeric sleeve having the Young's modulus disclosed by Songer.

Applicants respectfully traverse for the following reasons.

The present invention is directed to a roller member comprising a metallic core roller and an unshrinkable sleeve, where the core roller is pressed into the unshrinkable sleeve and the sleeve is heat-welded onto the surface of the core roller. The sleeve is formed from an elastomer material and has a Young's modulus of 120-200 MPa and a thickness of 30-200 μm . As applied to OA apparatuses, the present invention exhibits enhanced toner removal performance and

improved durability. More specifically, the present invention relates to a roller member which can be used for imparting a charge, eliminating a charge, or removing toner adhered onto the surface of the transfer belt or a transfer-conveyor belt, in any of a variety of OA apparatus as such as copy machines and printers.

In contrast, the Examiner relies on Bresson, Van der Velden and Songer, each of which only discloses a printing sleeve (roller member) carried in comparatively large-sized printing machines, such as, for example, a rotary press, completely different from OA apparatuses. That is, it is respectfully submitted that the prior art relied upon is taken from a non-analogous art area with respect to the claimed invention (i.e., roller member for use in OA apparatuses). In such circumstances, and because the rejection is posed under 35 U.S.C. § 103(a), the preamble providing information regarding the environment in which the invention operates should be considered in the obviousness determination.

Applicants further comment on the cited references and unobviousness of the present invention as follows.

Bresson discloses a cylinder (1) having a sleeve/blanket (2) disposed thereon. Col. 2, lines 14-18. The sleeve is a composite structure formed by base or inner layer (4), an intermediary layer (4) and a printing layer (6). Col. 2, lines 25-46. The base layer (4) is adhered to the outer surface of cylinder (1) via a coating of adhesive (3).

That is, Bresson discloses that the sleeve may be fitted by any suitable method onto the cylinder (core roll). For example, the sleeve (interlayer) may be adhered onto the outer surface of the cylinder by a coating of adhesive. However, as recognized by the Examiner, Bresson does

not disclose that the sleeve is unshrinkable and that the core roller is pressed into the unshrinkable sleeve.

Van der Velden discloses a cylindrical supporting surface (4) having a knitted fabric (2') disposed thereon. A sheet of thermoplastic elastomeric composition (5) is applied thereon through heat and pressure so as to obtain a fusion of the sheet with the fabric. See Abstract and col. 3, lines 36-51.

That is, Van der Velden discloses that the cylinder (core roller) enclosed by a polyamide multi-filament jacket is covered with a sheet (sleeve) of a thermoplastic elastomeric composition, and the sheet is heat-welded onto the surface of the cylinder via the multifilament jacket. However, Van der Velden does not disclose that the sheet is directly heat-welded onto the surface of the cylinder.

Songer, likewise does not cure the deficiencies in Bresson or van der Velden. Songer discloses a hard rubber layer (20) made of a material such as ethylene propylene diene monomer material (EPDM), having a tensile strength of 17000 to 23000 psi. See, col. 3, lines 50-62. However, Songer does not disclose pressing an unshrinkable sleeve and heat-welding it onto a core roller as claimed.

Thus, in Bresson, the sleeve (inter layer) is adhered onto the outer surface of the cylinder via a coating of adhesive. In Van der Velden, a thermoplastic sheet is heat-welded onto the surface of the cylinder via a multifilament jacket. However, the Examiner has not set forth any reason in the prior art as to the desirability of combining these references, and specifically has not cited any prior art that teaches that heat-welding is the equivalent of coating via an adhesive

in the environment of a roller member. Furthermore, even if it were appropriate to combine the cited references, the resulting combination would still not achieve the present invention for the reasons discussed above. Namely, there is nothing in the prior art which teaches or suggests the roller member of the invention where a metallic core roller is pressed into an unshrinkable sleeve and the sleeve is heat-welded onto the surface of the core roller.

Withdrawal of the foregoing rejection is respectfully requested.

Claim 2 was rejected as being unpatentable over Bresson in view of van der Velden and Songer, and further in view of Clerk et al (U.S. Patent No. 3,937,919).

Clark et al has been applied for the sole feature of disclosing a sleeve that is formed from a polyamide.

However, Clark et al does not supply the features missing in Bresson, van der Velden and Songer, discussed above. In other words, Clark et al does not disclose pressing an unshrinkable sleeve and heat-welding it onto a core roller as claimed.

Withdrawal of the foregoing rejection is respectfully requested.

Claim 4 was rejected as being unpatentable over Bresson in view of van der Velden and Songer, and further in view of Jinzai et al.

Jinzai et al has been applied for the disclosure of a sleeve material that has the claimed resistivity. Thus, the Examiner concluded that it would have been obvious to combine Jinzai with the remainder of the documents.

Applicants respectfully traverse.

The Examiner has not identified adequate motivation in the prior art to combine these references. However, regardless of the lack of motivation, Jinzai does not supply the missing features in Bresson, van der Velden and Songer. Thus, even if combined in the manner suggested, one of ordinary skill would not arrive at the claimed invention.

Withdrawal of the foregoing rejection is respectfully requested.

Claim 5 was rejected as being unpatentable over Bresson in view of van der Velden and Songer, and further in view of Lane et al (U.S. Patent No. 5,983,799). Lane et al was cited as teaching a surface roughness of 5µm or less.

Applicants rely on the response above with respect to the rejection of claims 1 and 3 over Bresson, Van der Velden and Songer. Additionally, it is respectfully submitted that the Examiner has not identified adequate motivation in the prior art to combine these references.

Withdrawal of the rejection is respectfully requested.

Claim 7 was rejected as being unpatentable over Bresson in view of van der Velden and Songer, further in view of White et al (U.S. Patent No. 4,089,265).

White et al was applied as disclosing a sleeve with a smaller inner diameter than the outer diameter of the core. Thus, the Examiner concluded that it would have been obvious to provide a sleeve with these dimensions to provide a tighter fit.

Applicants respectfully traverse for the following reasons.

The Examiner implicitly acknowledges that Bresson, Van der Velden and Songer do not disclose a core roller pressed into an unshrinkable sleeve and the unshrinkable sleeve heat-welded to the core roller. However, as discussed above, White et al does not cure the

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deficiencies with respect to independent claim 1. Therefore, withdrawal of the foregoing rejection is respectfully requested.

Withdrawal of all rejections and allowance of claims 1-5 and 7 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

Respectfully submitted,



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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claim 1 is amended as follows:

1. (Twice Amended) A roller member, which is used in OA apparatuses for imparting a charge, eliminating a charge, or removing toner adhered onto the surface of a transfer belt or a transfer-conveyor belt, comprising a metallic core roller and an unshrinkable sleeve, wherein the core roller is pressed into the unshrinkable sleeve and the sleeve is heat-welded onto the surface of the core roller, which sleeve is formed from an elastomer material and has a Young's modulus of 120-200 MPa and a thickness of 30-200 μm .